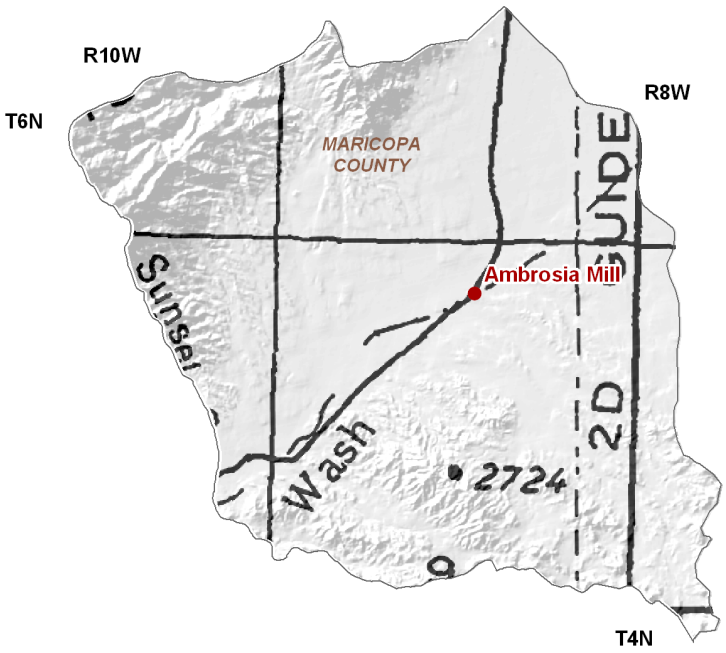
Section 7.9
Tiger Wash Basin

7.9.1 Geography of the Tiger Wash Basin

The Tiger Wash Basin, located in the northeastern part of the planning area is 74 square miles in area, the smallest basin in the planning area and the state. Geographic features and principal places are shown on Figure 7.9-1. The basin is characterized by a valley bordered by mountain ranges. Vegetation types include Lower Colorado River Valley and Arizona Uplands Sonoran desertscrub and a small amount of southwestern interior chaparral near the northwestern basin boundary. (See Figure 7.0-7)

- Principal geographic features shown on Figure 7.9-1 are:
    - Basin place of Ambrosia Mill
    - Tiger Wash in the center of the basin
    - The lowest point is approximately 1,950 feet where Tiger Wash exits the basin southeast of Ambrosia Mill
- Not well shown on Figure 7.9-1 are the Harquahala Mountains in the northern portion of the basin and the Big Horn Mountains in the southern portion of the basin with the highest point at 2,724 feet.



Base Map: USGS 1:500,000, 1981

0 3 6 Miles

City, Town or Place

Figure 7.9-1
Tiger Wash Basin
Geographic Features

7.9.2 Land Ownership in the Tiger Wash Basin

Land ownership, including the percentage of ownership by category, for the Tiger Wash Basin is shown in Figure 7.9-2. The principal feature of land ownership in this basin is the large proportion of U.S Bureau of Land Management lands. A description of land ownership data sources and methods is found in Volume 1, Section 1.3.8. Land ownership categories are discussed below in the order of largest to smallest percentage in the basin.

U.S. Bureau of Land Management

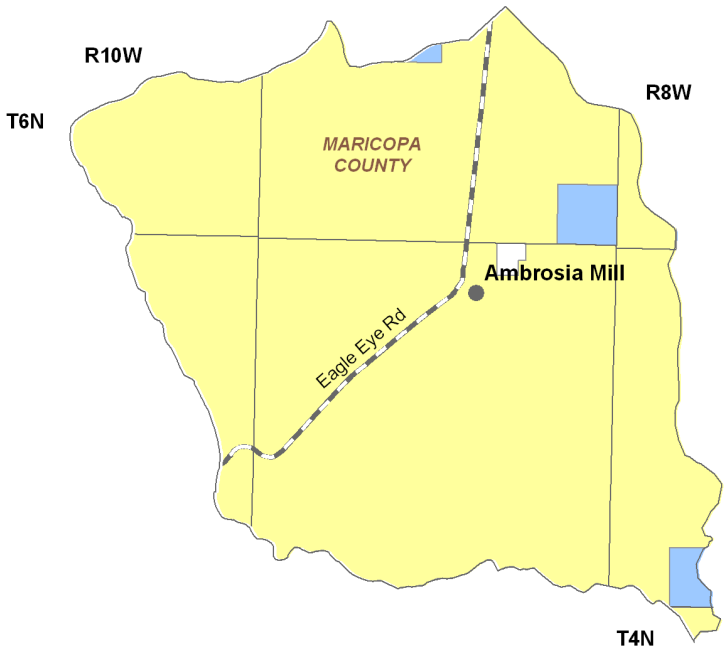
- 97.4% of the land is federally owned and managed by the Lower Sonoran Field Office of the U.S. Bureau of Land Management.
- This basin contains 8,700 acres of the 23,000 acre Harquahala Mountains Wilderness. (See Figure 7.0-9)
- Land use includes grazing, resource conservation and recreation.

State Trust Land

- 2.3% of the land is held in trust for the public schools under the State Trust Land system.
- Primary land use is grazing.

Private

- 0.3% of the land is private.
- Land uses include domestic and grazing.



Source: ALRIS, 2004

0 3 6 Miles

Land Ownership (Percentage in Basin)

U.S. Bureau of Land Management (97.4%)
State Trust (2.3%)
Private (0.3%)
Major Road
City, Town or Place

Figure 7.9-2
Tiger Wash Basin
Land Ownership

7.9.3 Climate of the Tiger Wash Basin

The Tiger Wash Basin does not contain NOAA/NWS, Evaporation Pan, AZMET or SNOTEL/ Snowcourse stations. Figure 7.9-3 shows precipitation contour data from the Spatial Climate Analysis Service (SCAS) at Oregon State University. A description of the climate data sources and methods is found in Volume 1, Section 1.3.3.

SCAS Precipitation Data

- See Figure 7.9-3
- Average annual rainfall is as high as 18 inches along the northwestern tip of the basin and as low as eight inches in the southwestern portion of the basin.

Table 7.9-1 Climate Data for the Tiger Wash Basin

A. NOAA/NWS Co-op Network:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Temperature Range (in F)		Average Precipitation (in inches)				
			Max/Month	Min/Month	Winter	Spring	Summer	Fall	Annual
None									

Source: WRCC, 2003

B. Evaporation Pan:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Avg. Annual Evap (in inches)
None			

Source: WRCC, 2003.

C. AZMET:

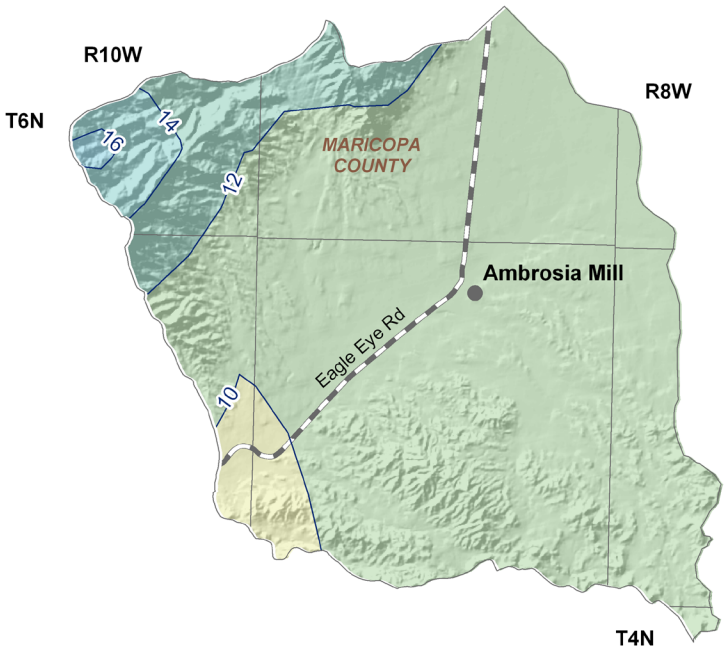
Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Annual Reference Evaportranspiration, in inches (N*umber of years to calculate averages*)
None			

Source: Arizona Meteorological Network, 2005

D. SNOTEL/Snowcourse:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Snowpack, at Beginning of the Month, as Inches Snow Water Content *(Number of measurements to calculate average)*					
			Jan.	Feb.	March	April	May	June
None								

Source: NRCS, 2005



Precipitation Data Source: Oregon State University, 1998

0 3 6 Miles

Figure 7.9-3
Tiger Wash Basin
Meteorological Stations
and Annual Precipitation

Average Annual Precipitation (1961-1990)
inches per year

- 8-10
- 10-12
- 12-14
- 14-16
- 16-18
- Precipitation Contour 12
- Major Road
- City, Town or Place

7.9.4 Surface Water Conditions in the Tiger Wash Basin

Reservoir and stockpond data, including maximum storage or maximum surface area, are shown in Table 7.9-4. Flood ALERT equipment in the basin is shown in Table 7.9-3 and Figure 7.9-4. There are no streamflow data or USGS runoff contour data available for this basin. A description of stream data sources and methods is found in Volume 1, Section 1.3.16. A description of reservoir data sources and methods is found in Volume 1, Section 1.3.11. A description of stockpond data sources and methods is found in Volume 1, Section 1.3.15.

Flood ALERT Equipment

- Refer to Table 7.9-3
- There is one precipitation station in the basin located at Tiger Wash.

Reservoirs and Stockponds

- Refer to Table 7.9-4.
- There are no large or small reservoirs and nine registered stockponds in this basin.

Table 7.9-2 Streamflow Data for the Tiger Wash Basin

Station Number	USGS Station Name	Drainage Area (in mi^2)	Mean Basin Elevation (in feet)	Period of Record	Average Seasonal Flow (% of annual flow)				Annual Flow/Year (in acre-feet)				Years of Record
					Winter	Spring	Summer	Fall	Minimum	Median	Mean	Maximum	
None													

Sources: USGS NWIS, USGS 1998 and USGS 2003.

Table 7.9-3 Flood ALERT Equipment in the Tiger Wash Basin

Station ID	Station Name	Station Type	Install Date	Responsibility
5130	Upper Tiger Wash	Precipitation	11/1/1981	Maricopa County FCD

Notes:
FCD = Flood Control District

Table 7.9-4 Reservoirs and Stockponds in the Tiger Wash Basin

A. Large Reservoirs (500 acre-feet capacity and greater)

MAP KEY	RESERVOIR/LAKE NAME *(Name of dam, if different)*	OWNER/OPERATOR	MAXIMUM STORAGE (AF)	USE	JURISDICTION
None identified by ADWR at this time					

B. Other Large Reservoirs (50 acre surface area or greater)

MAP KEY	RESERVOIR/LAKE NAME *(Name of dam, if different)*	OWNER/OPERATOR	MAXIMUM SURFACE AREA (acres)	USE	JURISDICTION
None identified by ADWR at this time					

C. Small Reservoirs (greater than 15 acre-feet and less than 500 acre-feet capacity)

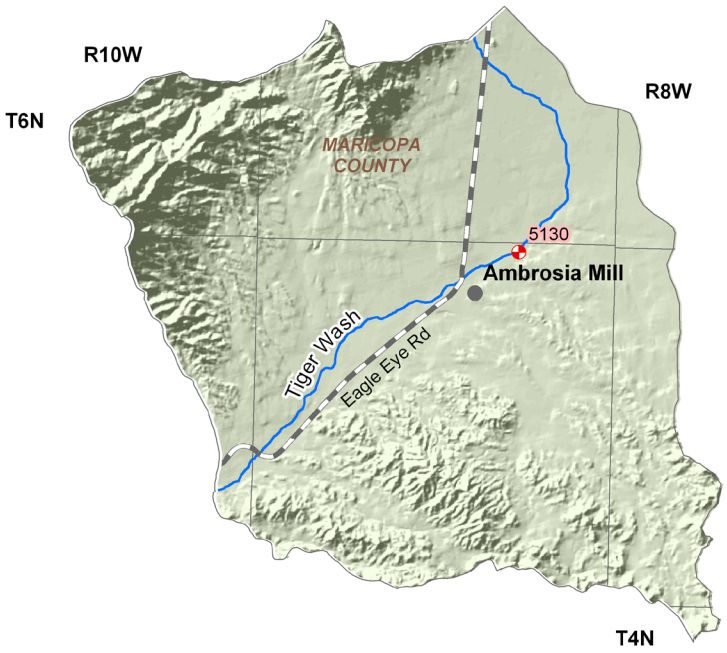
Total number: 0
Total maximum storage: 0 acre-feet

D. Other Small Reservoirs (between 5 and 50 acres surface area)

Total number: 0
Total surface area: 0 acres

E. Stockponds (up to 15 acre-feet capacity)

Total number: 9



Stream Data Source: ALRIS, 2005

0 3 6 Miles

N S

Figure 7.9-4
Tiger Wash Basin
Surface Water Conditions

Stream Channel (width of line reflects stream order)
Flood ALERT Equip. & Station ID 9999
Major Road
City, Town or Place

7.9.5 Perennial/Intermittent Streams and Major Springs in the Tiger Wash Basin

The total number of springs in the basin are shown in Table 7.9-5. The location of an intermittent stream is shown on Figure 7.9-5. A description of data sources and methods for intermittent and perennial reaches is found in Volume 1, Section 1.3.16. A description of spring data sources and methods is found in Volume 1, Section 1.3.14.

- There are no perennial streams and one intermittent stream, Browns Canyon Wash.
- There are no major or minor springs in the basin.
- The total number of springs, regardless of discharge, identified by the USGS is three.

Table 7.9-5 Springs in the Tiger Wash Basin

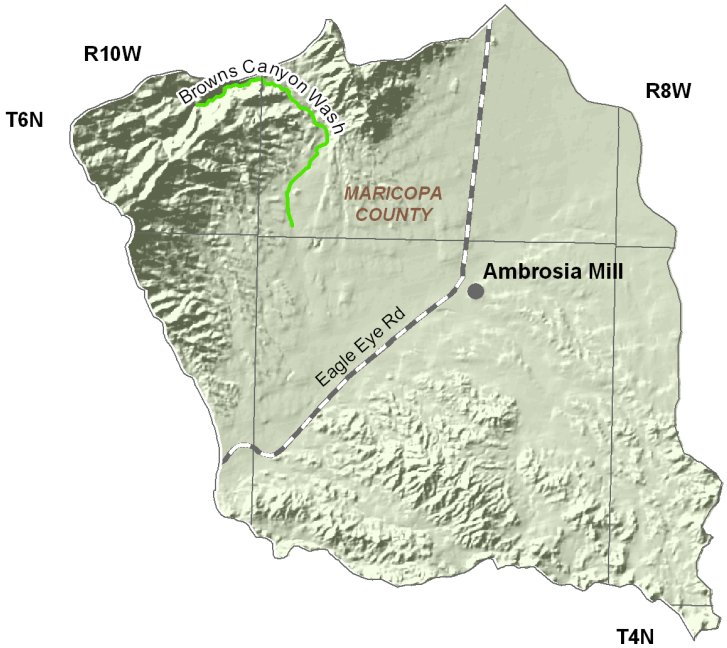
A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm)	Date Discharge Measured
		Latitude	Longitude		
None identified by ADWR at this time					

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm)	Date Discharge Measured
	Latitude	Longitude		
None identified by ADWR at this time				

C. Total number of springs, regardless of discharge, identified by USGS (see ALRIS, 2005 and USGS, 2006): 3



Stream Data Source: AGFD, 1993 & 1997

0 3 6 Miles

Figure 7.9-5
Tiger Wash Basin
Perennial\Intermittent Streams and Major (>10 gpm) Springs

Intermittent Stream
Major Road
City, Town or Place

7.9.6 Groundwater Conditions of the Tiger Wash Basin

Major aquifers, well yields, estimated water in storage, number of index wells and date of last water-level sweep are shown in Table 7.9-6. Figure 7.9-6 shows aquifer flow direction. Data on water-level change between 1990-1991 and 2003-2004 was not available for this basin. Figure 7.9-7 contains hydrographs for selected wells shown on Figure 7.9-6. A description of aquifer data sources and methods is found in Volume 1, Section 1.3.2. A description of well data sources and methods, including water-level changes and well yields, is found in Volume 1, Section 1.3.19.

Major Aquifers

- Refer to Table 7.9-6 and Figure 7.9-6.
- The major aquifer in this basin is basin fill.
- Groundwater flow is generally to the north and south away from the center of the basin.

Well Yields

- Refer to Table 7.9-6.
- The only well yield data available indicates a well yield ranges from dry to 500 acre-feet.

Natural Recharge

- Refer to Table 7.9-6.
- The estimate of natural recharge is less than 1,000 acre-feet per year.

Water in Storage

- Refer to Table 7.9-6.
- There are three estimates of water in storage ranging from 700,000 acre-feet to two million acre-feet, both to a depth of 1,200 feet.

Water Level

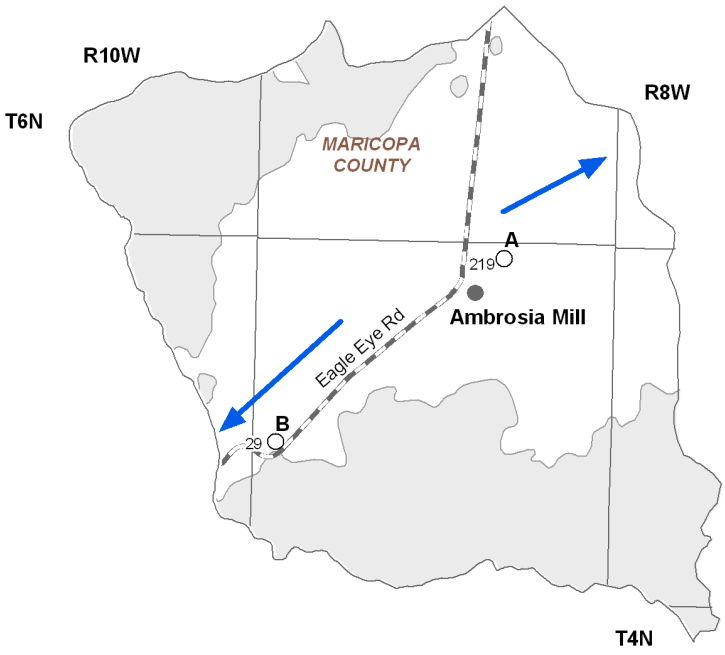
- Refer to Figure 7.9-7.
- The Department annually measures two index wells in this basin, hydrographs for these index wells are shown on Figure 7.9-6.

Table 7.9-6 Groundwater Data for the Tiger Wash Basin

Basin Area, in square miles:	74	
Major Aquifer(s):	**Name and/or Geologic Units**	
	Basin Fill	
Well Yields, in gal/min:	769** (1 well measured)	Measured by ADWR and/or USGS
	N/A	Reported on registration forms for large (> 10-inch) diameter wells
	N/A	ADWR (1990 and 1994)
	Range 0-500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	<1,000	Freethey and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	700,000 (to 1,200 ft)	ADWR (1990)
	1,000,000[1] (to 1,200 ft)	Freethey and Anderson (1986)
	2,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
Current Number of Index Wells:	2	
Date of Last Water-level Sweep:	2004 (5 wells measured)	

** well located just outside basin boundary in Phoenix AMA

[1]Predevelopment Estimate



0 3 6 Miles

N
S

Water-level change in feet between 1990-1991 and 2003-2004

375 H = number is depth to water in feet during 2003-2004; letter is hydrograph

Change Data Not Available

Generalized Flow Direction

Consolidated Crystalline & Sedimentary Rocks

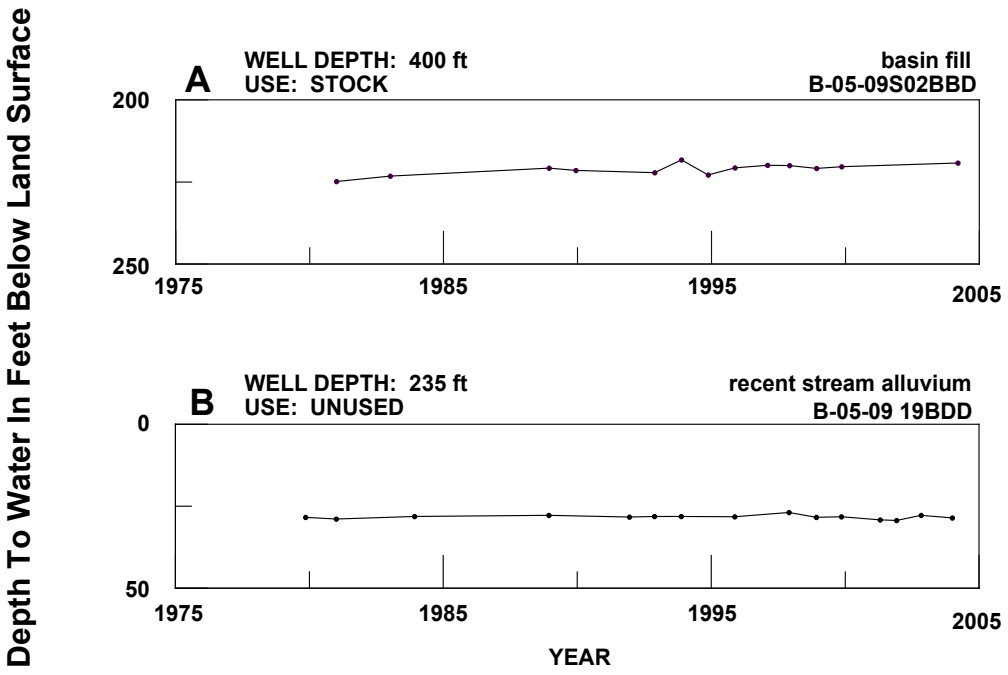
Unconsolidated Sediments

Major Road

City, Town or Place

Figure 7.9-6
Tiger Wash Basin
Groundwater Conditions

Figure 7.9-7
Tiger Wash Basin
Hydrographs Showing Depth to Water in Selected Wells



7.9.7 Water Quality of the Tiger Wash Basin

Wells, springs and mine sites with parameter concentrations that have equaled or exceeded drinking water standard(s), including location and parameter(s) are shown in Table 7.9-7A. There are no impaired lakes or streams in this basin. Figure 7.9-8 shows the location of water quality occurrences keyed to Table 7.9-7. A description of water quality data sources and methods is found in Volume 1, Section 1.3.18. Not all parameters were measured at all sites; selective sampling for particular constituents is common.

Wells, Springs and Mine Sites

- Refer to Table 7.9-7A.
- Two wells have parameter concentrations that have equaled or exceeded drinking water standards.
- The parameters exceeded were nitrate and arsenic.

Table 7.9-7 Water Quality Exceedences in the Tiger Wash Basin[1]

A. Wells, Springs and Mines

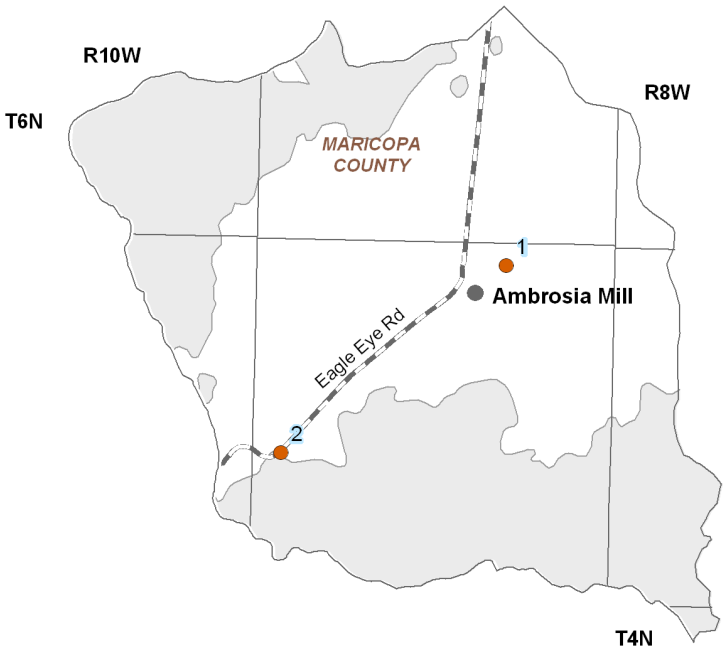
Map Key	Site Type	Site Location			Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS)[2]
		Township	Range	Section	
1	Well	5 North	9 West	2	NO3
2	Well	5 North	9 West	19	As

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard	Parameter(s) Exceeding Use Standard
None identified by ADWR at this time						

Notes:

[1] Water quality samples collected between 1984 and 2001.
[2] As = Arsenic
NO3 = Nitrate/ Nitrite



0 3 6 Miles

Well, Spring or Mine Site that has Equaled or Exceeded DWS 1
Consolidated Crystalline & Sedimentary Rocks
Unconsolidated Sediments
Major Road
City, Town or Place

Figure 7.9-8
Tiger Wash Basin
Water Quality Conditions

7.9.8 Cultural Water Demands in the Tiger Wash Basin

Cultural water demand data including population, number of wells and the average well pumpage and surface water diversions by the municipal, industrial and agricultural sectors are shown in Table 7.9-8. There is no recorded effluent generation in this basin. The USGS National Gap Analysis Program, the primary source of cultural demand map data, showed no demand centers for this basin. A description of cultural water demand data sources and methods is found in Volume 1, Section 1.3.5. More detailed information on cultural water demands is found in Section 7.0.7.

Cultural Water Demands

- Refer to Table 7.9-8
- Population in this basin is very small, with less than ten residents in 2000.
- There are no recorded surface water uses. All groundwater use is for municipal demand and has remained relatively constant since 1971.
- As of 2003 there were seven registered wells with a pumping capacity of less than or equal to 35 gallons per minute and no wells with a pumping capacity of more than 35 gallons per minute.

Table 7.9-8 Cultural Water Demands in the Tiger Wash Basin[1]

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal	Industrial	Irrigation	Municipal	Industrial	Irrigation	
1971		7[2]	0[2]	<500			NR			ADWR (1994)
1972										
1973										
1974										
1975										
1976				<500			NR			
1977										
1978										
1979										
1980	<10									
1981	<10	0	0	<500			NR			
1982	<10									
1983	<10									
1984	<10									
1985	<10									
1986	<10	0	0	<500			NR			
1987	<10									
1988	<10									
1989	<10									
1990	<10									
1991	<10	0	0	<300	NR	NR	NR			USGS (2005)
1992	<10									
1993	<10									
1994	<10									
1995	<10									
1996	<10	0	0	<300	NR	NR	NR			
1997	<10									
1998	<10									
1999	<10									
2000	<10									
2001	<10	0	0	<300	NR	NR	NR			
2002	<10									
2003	<10									
2010	<10									
2020	<10									
2030	<10									
2040	<10									
2050	<10									
	WELL TOTALS:	**7**	**0**							

[1] Does not include evaporation losses from stockponds and reservoirs.
[2] Includes all wells through 1980.
NR - Not reported

Table 7.9-9 Effluent Generation in the Tiger Wash Basin

Facility Name	Ownership	City/Location Served	Population Served	Volume Treated/Generated (acre-feet)	Disposal Method							Current Treatment Level	Population Not Served	Year of Record
					Water-course	Evaporation Pond	Irrigation	Golf Course	Wildlife Area	Discharged to Another Facility	Infiltration Basins			
No Waste Water Treatment Facilities Identified by ADWR in this Basin														

7.9.9 Water Adequacy Determinations in the Tiger Wash Basin

No water adequacy applications for the Tiger Wash Basin were filed with the Department as of May 2005. A description of the Water Adequacy Program is found in Volume 1, Appendix A. Adequacy determination data sources and methods are found in Volume 1, Section 1.3.1.

Table 7.9-10 Adequacy Determinations in the Tiger Wash Basin[1]

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
None identified by ADWR at this time											

Tiger Wash Basin
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